

Nocturnal and Diurnal

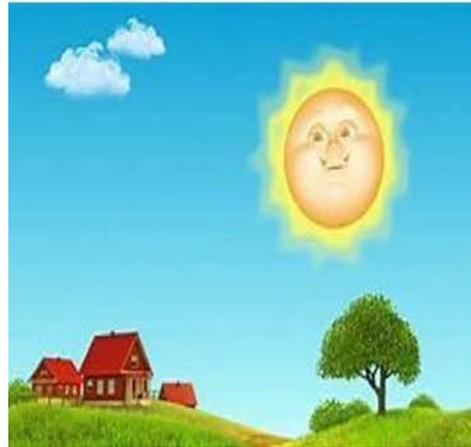
Crepuscular and Metaturnal/Cathemeral/Bimodal

Living things and their biological clocks!

When am I active?

Diurnal=active during the day

Nocturnal=active at night



We can ask questions and compare different living things. One thing we compare is when living things are active.

Where do I live?

When an I active?

Am I solitary or social?

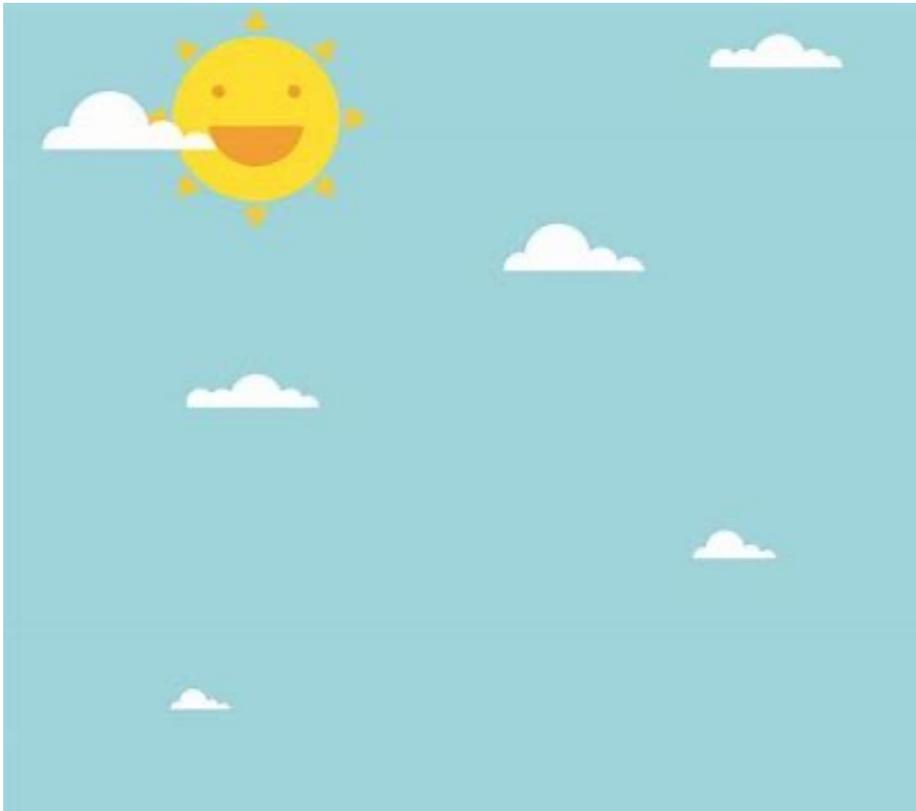
What do I eat?

How do I look?

What is special about me?

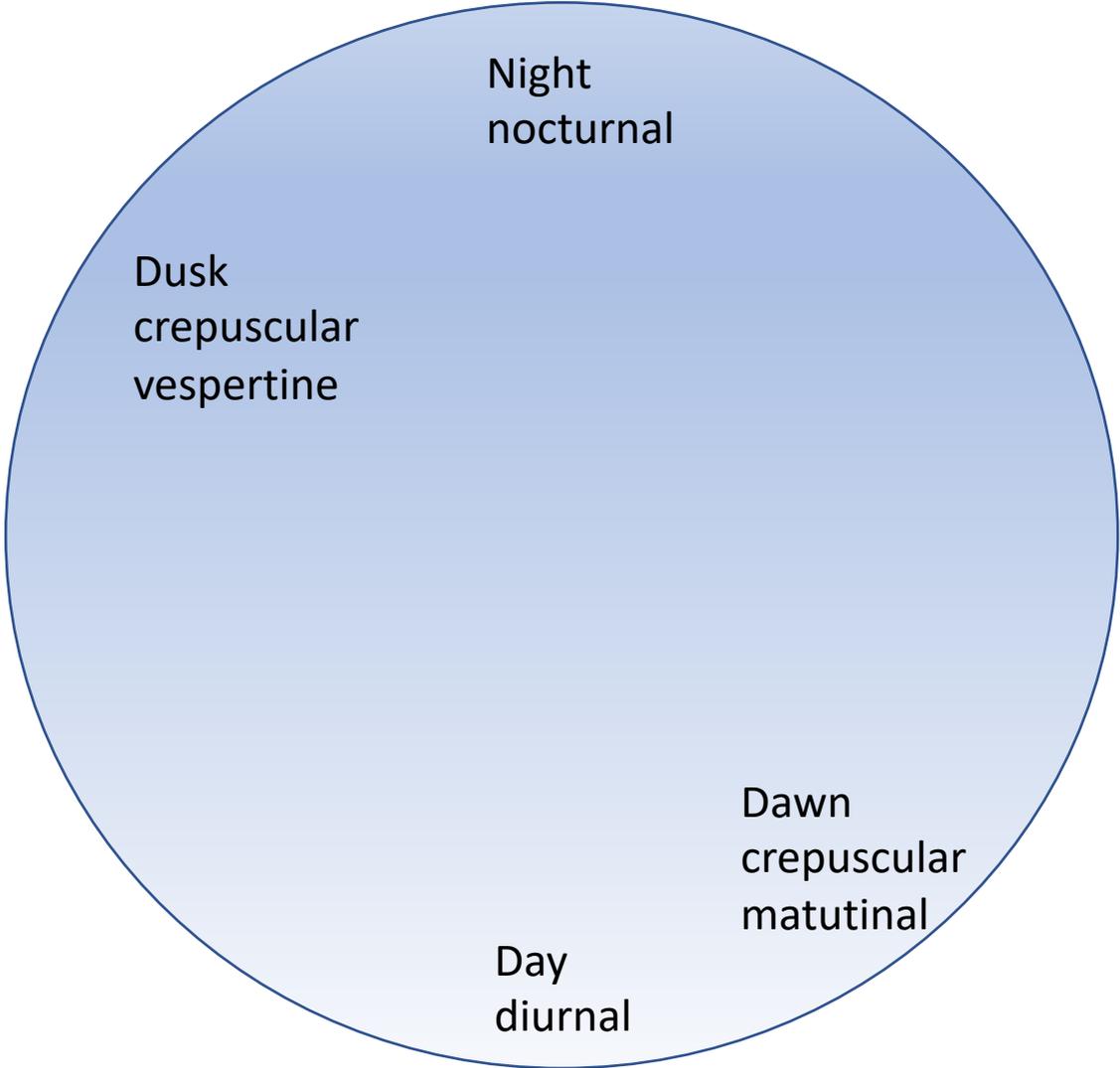
Scientists believe that originally animals were diurnal.

70% of animals are nocturnal.

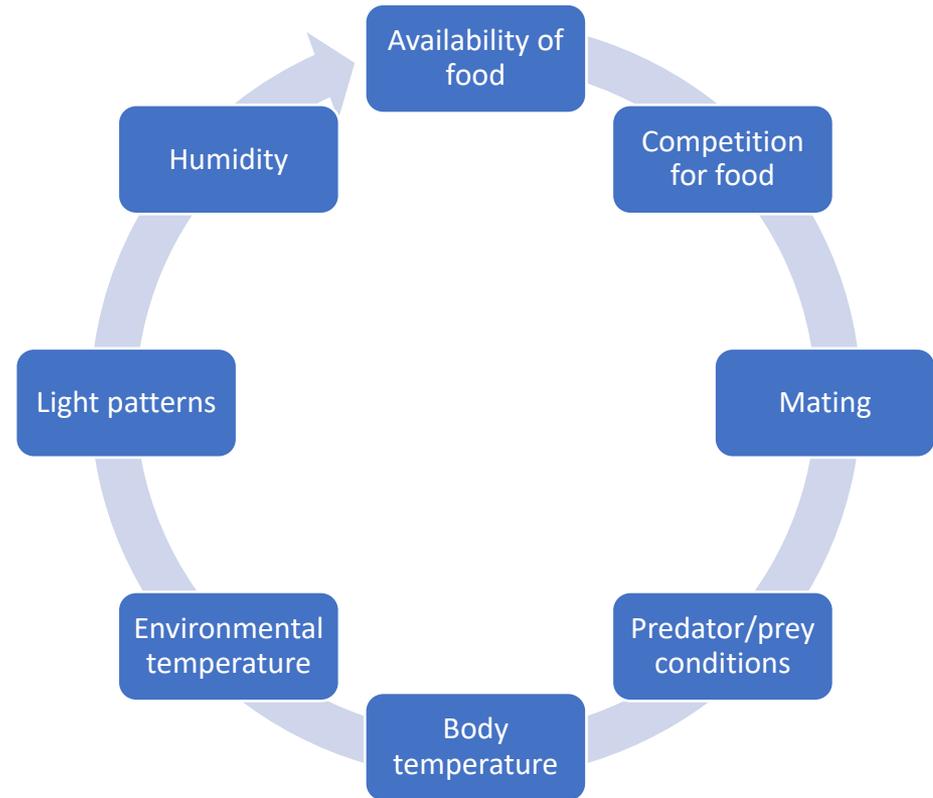


Day divisions

The 24-hour day:



Factors affecting activity:



Different activity patterns

Diurnal—active during the day

Nocturnal—active at night

Crepuscular matutinal—active at dawn before the sun is up

Crepuscular vespertine—active at twilight before the sun is set

Metaturnal—animals awake/sleep varies with need and conditions

Bimodal—active at two times of day

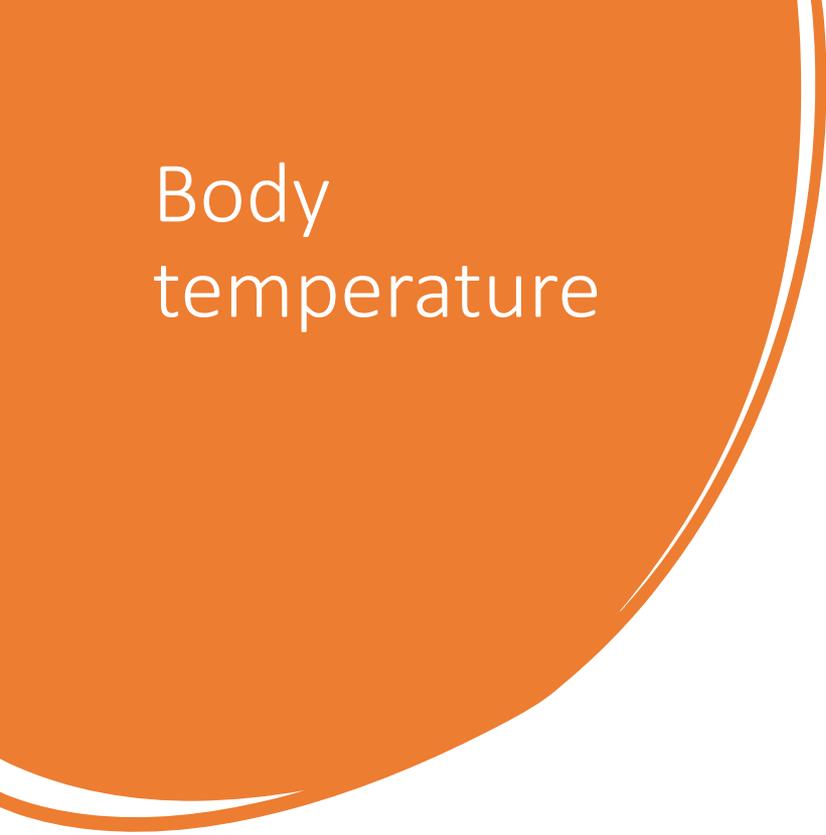
Cathemeral—active anytime

Areas of
difference
between diurnal
and nocturnal
animals

Body
temperature

Senses

Communication

A large orange circular graphic on the left side of the slide, partially cut off by the edge. It contains the text 'Body temperature' in white.

Body temperature

Diurnal living creatures:

Ectothermic

Lower body temperature

Nocturnal living
creatures:

Higher body
temperatures

Senses

Diurnal creatures:

Rely mainly on vision

Lots of cones, smaller cornea to eye size for acuity, eyes have properties to adapt to light variation

Nocturnal creatures:

Smell, infrasound, air pressure, wind direction, whisker detection of near motion

Extreme dilation of pupils, reflective layer behind the retina, larger cornea to eye size for sensitivity, lots of rods, prominent eyes, light collecting lenses, orienting by moon polarization, stars and landmarks

Communication

Diurnal animals
communicate
with visual cues.

Nocturnal animals
communicate
with sounds.

Pros and cons of diurnal activity



- Diurnal activity is energy saving
- Diurnal animals can use excellent vision and color vision
- Diurnal animals can use the sun and ambient warmth to stay warm
- However diurnal animals are more visible to predators.

Pros and cons of nocturnal activity



- Nocturnal animals have fewer predators.
- It is easier to avoid detection at night.
- There's less competition at night.
- It's cooler at night and conserves water in hot climates.
- However, there are disadvantages.
- Sleeping during the way is risky.
- Light pollution can confuse information.
- Eyesight is weaker.

What activity pattern would your animal want to have?

Why I want to be diurnal:

- 1
- 2
- 3
- 4
- 5

Why I want to be nocturnal:

- 1
- 2
- 3
- 4
- 5



Examples

Diurnal—primates, birds, deer, cows

Nocturnal—armadillo, opossum, raccoons, coyotes, skunks

Crepuscular matutinal—honeybees, gerbils

Crepuscular vespertine—bats, owls, insects

Metaturnal—used for animals when activity patterns vary/Cathemeral used when animals sleep anytime—lions, bobcats

Bimodal--rabbits

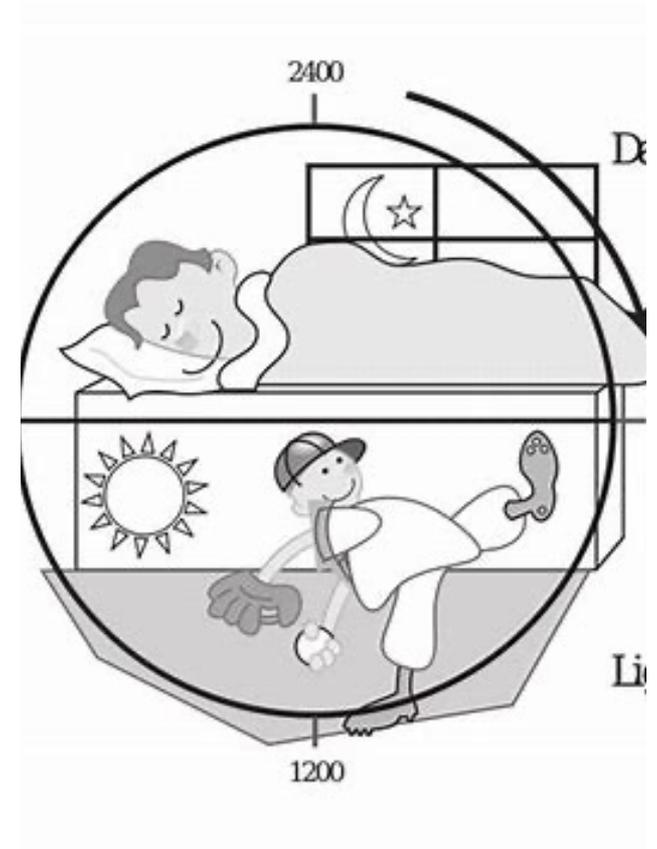
Plants can be diurnal (sunflowers) or nocturnal (night blooming cereus) varying with pollinator activity.

Can you fill in this chart?

	Nocturnal	Diurnal
Senses		
Body temperature		
Communication		
Activity		
Examples		

Other concepts related to activity patterns:

- Phenology is the study of periodic events in the life cycle of living things, and how these are influenced by seasonal and habitat changes.
- Circadian rhythm or circadian cycle, is a natural, internal process that regulates the sleep–wake cycle and repeats roughly every 24 hours. It refers to any process that originates within an organism.
- Niche differentiation is what makes variation in activity patterns work, with different animals hunting at different times of day, and thereby decreasing competition.



This book deals with daily activity patterns...

and seasonal changes in activity month by month.

